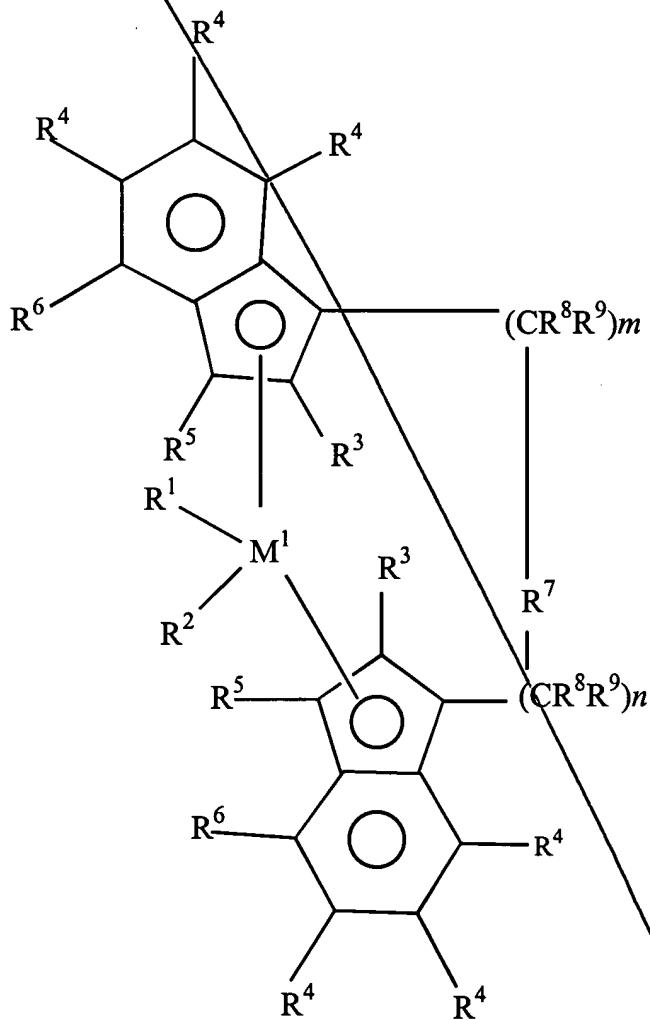


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U.S. Patent No. 5,693,836

*mixture,*

1. A compound of the formula I in its pure meso-form or as a meso:rac > 1:99



(I)

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in which

M<sup>1</sup> is a metal from group IVb, Vb or VIb of the Periodic Table,

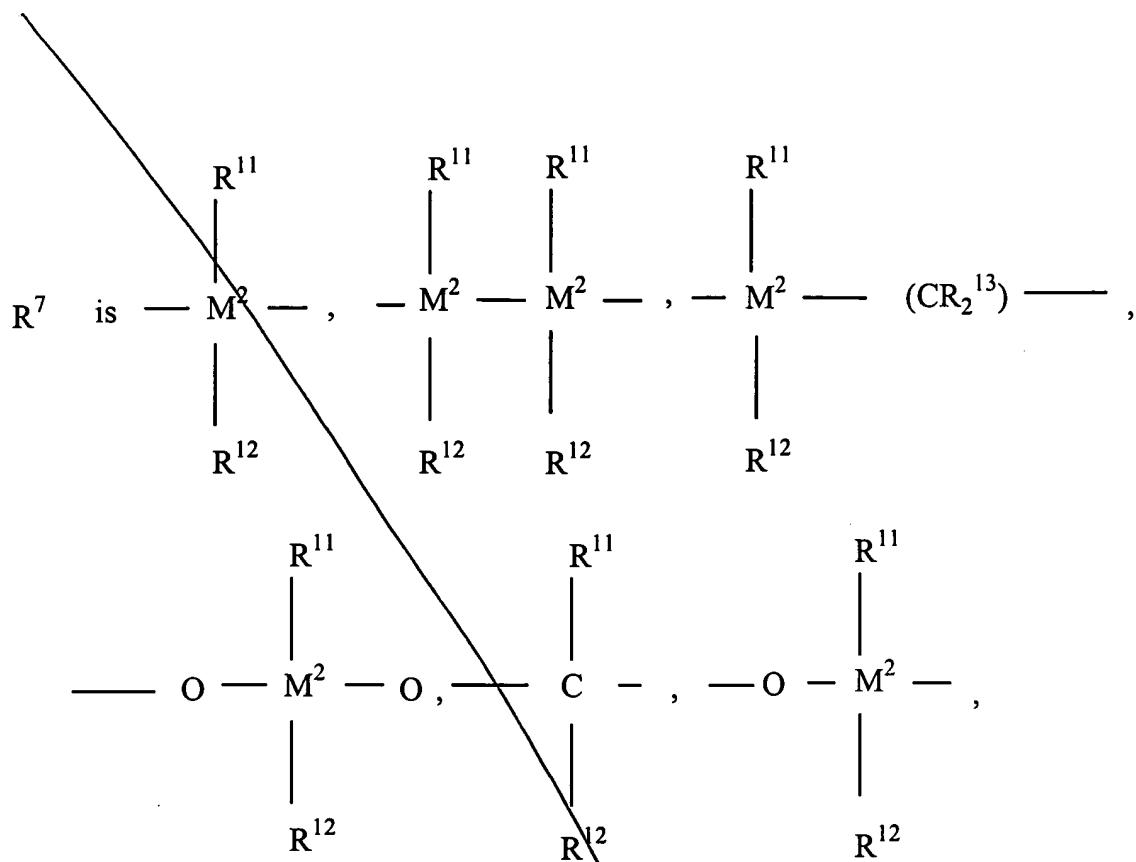
R<sup>1</sup> and R<sup>2</sup> are identical or different and are a hydrogen atom, a C<sub>1</sub>-C<sub>10</sub>-alkyl group, a C<sub>1</sub>-C<sub>10</sub>-alkoxy group, a C<sub>6</sub>-C<sub>10</sub>-aryl group, a C<sub>6</sub>-C<sub>10</sub>-aryloxy group, a C<sub>2</sub>-C<sub>10</sub>-alkenyl group, a C<sub>7</sub>-C<sub>40</sub>-arylalkyl group, a C<sub>7</sub>-C<sub>40</sub>-alkylaryl group, a C<sub>8</sub>-C<sub>40</sub>-arylalkenyl group or a halogen atom,

the radicals R<sup>4</sup> and R<sup>5</sup> are identical or different and are a hydrogen atom, a halogen atom, a C<sub>1</sub>-C<sub>10</sub>-alkyl group, which may be halogenated, a C<sub>6</sub>-C<sub>10</sub>-aryl group, which may be halogenated, or an -NR<sub>2</sub><sup>10</sup>, -SR<sup>10</sup>, -OSiR<sub>3</sub><sup>10</sup>, -SiR<sub>3</sub><sup>10</sup> or -PR<sub>2</sub><sup>10</sup> radical in which R<sup>10</sup> is a halogen atom, a C<sub>1</sub>-C<sub>10</sub>-alkyl group or a C<sub>6</sub>-C<sub>10</sub>-aryl group,

R<sup>3</sup> and R<sup>6</sup> are identical or different and are as defined for R<sup>4</sup>, with the proviso that R<sup>3</sup> and R<sup>6</sup> are not hydrogen,  
or two or more of the radicals R<sup>3</sup> to R<sup>6</sup>, together with the atoms connecting them, form a ring system,

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>BR<sup>11</sup>, >AIR<sup>11</sup>, -Ge-, -Sn-, -O-, -S-, >SO, >SO<sub>2</sub>, >NR<sup>11</sup>, >CO, >PR<sup>11</sup> or >P(O)R<sup>11</sup>,

where

R<sup>11</sup>[, R<sup>12</sup> and R<sup>13</sup> are identical or] and R<sup>12</sup> are different and are a hydrogen atom, a halogen atom, a C<sub>1</sub>-C<sub>10</sub>-alkyl group, a C<sub>1</sub>-C<sub>10</sub>-fluoroalkyl group, a C<sub>6</sub>-C<sub>10</sub>-aryl group, a C<sub>6</sub>-C<sub>10</sub>-fluoroaryl group, a C<sub>1</sub>-C<sub>10</sub>-alkoxy group, a C<sub>2</sub>-C<sub>10</sub>-alkenyl group, a C<sub>7</sub>-C<sub>40</sub>-arylalkyl group, a C<sub>8</sub>-C<sub>40</sub>-arylaalkenyl group or a C<sub>7</sub>-C<sub>40</sub>-alkylaryl group,

R<sup>13</sup> is a hydrogen atom, a halogen atom, a C<sub>1</sub>-C<sub>10</sub>-alkyl group, a C<sub>1</sub>-C<sub>10</sub>-fluoroalkyl

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group, a  $C_6$ - $C_{10}$ -aryl group, a  $C_6$ - $C_{10}$ -fluoroaryl group, a  $C_1$ - $C_{10}$ -alkoxy group, a  $C_2$ - $C_{10}$ -alkenyl group, a  $C_7$ - $C_{40}$ -arylketyl group, a  $C_8$ - $C_{40}$ -arylalkenyl group or a  $C_7$ - $C_{40}$ -alkylaryl group,

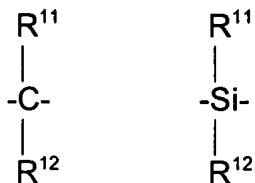
or  $R^{11}$  and  $R^{12}$ , or  $R^{11}$  and  $R^{13}$ , in each case together with the atoms connecting them, form a ring,

$M^2$  is silicon, germanium or tin,

$R^8$  and  $R^9$  are identical or different and are as defined for  $R^{11}$ , and

$m$  and  $n$  are identical or different and are zero, 1 or 2, where  $m$  plus  $n$  is zero, 1 or 2.

2. A compound as claimed in claim 1, wherein, in the formula I,  $M^1$  is Zr or Hf,  $R^1$  and  $R^2$  are identical or different and are methyl or chlorine,  $R^3$  and  $R^6$  are identical or different and are methyl, isopropyl, phenyl, ethyl or trifluoromethyl,  $R^4$  and  $R^5$  are hydrogen or as defined for  $R^3$  and  $R^6$ , or  $R^4$  forms an aliphatic or aromatic ring with  $R^6$ , or adjacent radicals  $R^4$  form an aliphatic or aromatic ring, and  $R^7$  is a



radical, and  $m$  plus  $n$  are zero or 1.

3. A compound [as claimed in claim 1, wherein the compound of the formula I is]

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selected from the group consisting of [Me<sub>2</sub>Si(2,4-dimethyl-1-indenyl)<sub>2</sub>ZrCl<sub>2</sub>, Me<sub>2</sub>Si(2-methyl-4-isopropyl-1-indenyl)<sub>2</sub>ZrCl<sub>2</sub>, Me<sub>2</sub>Si(2-ethyl-4,methyl-1-indenyl)<sub>2</sub>ZrCl<sub>2</sub>, Ph(Me)Si(2-methyl-4-isopropyl-1-indenyl)<sub>2</sub>ZrCl<sub>2</sub>, Me<sub>2</sub>Si(2-methyl-4,5-benzoindenyl)<sub>2</sub>ZrCl<sub>2</sub>,] Me<sub>2</sub>Si(2,4,6-trimethyl-1-indenyl)<sub>2</sub>ZrCl<sub>2</sub>, Me<sub>2</sub>Si(2-methyl-4,6-diisopropyl-1-indenyl)<sub>2</sub>ZrCl<sub>2</sub>, [Me<sub>2</sub>Si(2-methyl- $\alpha$ -acenaphth-indenyl)<sub>2</sub>ZrCl<sub>2</sub>,] Me<sub>2</sub>Si(2-methyl-4-phenyl-1-indenyl)<sub>2</sub>ZrCl<sub>2</sub>, ethylene(2,4,6-trimethyl-1-indenyl)<sub>2</sub>ZrCl<sub>2</sub>, [ethylene(2-methyl-4,5-benzoindenyl)<sub>2</sub>ZrCl<sub>2</sub>,] or methylethylene(2-methyl- $\alpha$ -acenaphthindenyl)<sub>2</sub>ZrCl<sub>2</sub> [or Ph(Me)Si(2-methyl- $\alpha$ -acenaphthindenyl)<sub>2</sub>ZrCl<sub>2</sub>].

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